REMARKS

Claims 1-19 are currently pending in the present application.

The Applicants wish to express their gratitude for the allowance of claims 1-3, 6-7 and 16-17, and the indication that claims 10-13 and 18-19 would be allowable if rewritten into independent form. Claims 10, 12-13 and 18 have been so amended, resulting in claims 1-3, 6-7, 10-13 and 16-19 standing allowed or allowable.

Claims 4-5 stand rejected under 35 U.S.C. § 112, second paragraph as indefinite. In addition, claims 4-5, 8-9 and 14-15 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,127,156 to Yokoyama, *et al.* ("Yokoyama").

The Applicants have amended claims 1 and 6 to change the word "via" to "through" to more accurately describe the relationship between the cylindrical seal ring and the fixed core and nozzle body. Amendments have been made to claims 4 and 5 to address the pending § 112, second paragraph rejections. Finally, claims 4, 8, 9 and 14 have been amended to address the pending § 102(b) rejections.

In view of the foregoing amendments and following remarks, reconsideration and withdrawal of the pending rejections is respectfully requested.

1. The Rejections Under § 112 Have Been Addressed.

"Terminal Taking-Out Window": Claim 4 stands rejected for lack of clear description in the Specification of the recited "terminal taking out window." The

Applicants note this feature is expressly described in the Specification.

In the summary of the invention, the yoke is described as having "[a] terminal taking-out window for the electromagnetic coil ... formed at a part of the upper portion of the yoke." Specification at 5:1-9. In the detailed description of the invention, and specifically in the detailed description of yoke 4, this feature is described (and shown in Fig. 3) as follows: "At a part of the shoulder 4b of the yoke 4 is formed as a window 4d, through which a connector terminal 29 for the electromagnetic coil 3 can be inserted." *Id.* at 11:11-19; Fig. 3.

Because the recited terminal take-out window is clearly described and illustrated, the Applicants respectfully submit claim 4 is sufficiently clear. Reconsideration and withdrawal of the pending rejection is respectfully requested.

"Around the Fixed Core": Claim 4 stands rejected under § 112, second paragraph, as indefinite on the grounds that the phrase "around the fixed core from above the fixed core" renders the claim unclear. The Applicants have amended claim 4, solely for the purpose of clarity and without intent to alter claim scope, to more clearly recite that "the electromagnetic coil and the yoke are arranged to be passed over the top of the fixed core and positioned around the fixed core," consistent with the assembly process described in the Specification. *See, e.g.,* Specification at 20:18-20 ("The assembly of the electromagnetic coil 2 and the yoke 4 are fitted into the fixed core 1 from above."). Reconsideration and withdrawal of this § 112, second paragraph rejection is respectfully requested.

"A Bore of the Yoke": Claim 5 stands rejected under § 112, second paragraph as indefinite on the grounds that the phrase "a bore of the upper end of the yoke is drawn" renders the claim unclear. The Applicants have amended claim 5, solely for the purpose of clarity and without intent to alter claim scope, to more clearly recite "an inner circumference of the upper end of a bore of the yoke through which the fixed core passes," consistent with the Specification. *See, e.g.,* Specification at 12:2-4 ("... further, the yoke 4 and the fixed core 1 are welded to each other at a position (d) ..."); Fig. 1. Reconsideration and withdrawal of this § 112, second paragraph rejection is respectfully requested.

2. The Remaining Claims Are Patentable Over Yokoyama.

The Applicants respectfully traverse the pending rejection of claims 4-5, 8-9 and 14-15 as anticipated under § 102(b) by Yokoyama on the grounds that this reference fails to disclose all the features of the present invention as recited in the as-amended claims.

Claims 4-5: In the present invention, as recited in claim 4, the fixed core and the nozzle body are united through a non-magnetic cylindrical seal ring into an assembly, and the coil is fixed between the outer surface of the assembly and the inner surface of the yoke. *See, e.g.*, Application Figs. 1, 3. The yoke covers the top of the coil, and a terminal taking-out window for the coil terminals is formed at an upper portion of the yoke. *Id.* (element 4d). Claim 4 has been amended to more clearly recite this feature (the yoke arranged "in such a manner as to cover the top of the electromagnetic coil," with the terminal window "formed at a part of the upper portion *of the yoke*").

In contrast, Yokoyama (which shares some common inventors with the present Application) discloses that the flange *of the fixed core* 22 covers the top of the coil, and the terminal window is formed in the *fixed core's* flange. Yokoyama Fig. 3 (window identifiable by element 32 (a seal) located therein).

Because Yokoyama fails to disclose claim 4's arrangements of the yoke, coil and terminal taking-out window, claim 4 and its dependent claim 5 are patentable over this reference under § 102(b).

Claims 8-9: Claim 8 recites that the nozzle body, fuel swirler and the orifice plate are separate members, and that the orifice plate is fitted and welded into the nozzle body in a manner such that the separate orifice plate presses the fuel swirler onto a receiving surface at one end of the nozzle body. For clarity, the Applicants have amended claim 8 to expressly recite that the fuel injector is configured such that the fuel swirler is located on a nozzle body receiving surface, and the separate orifice plate is *welded* into the nozzle body *over* the fuel swirler. Amended Claim 8 ("the orifice plate is fitted and *welded* to the inner circumference in such a manner as to *press* the fuel swirler *on the receiving surface*, thereby the fuel swirler *and* the orifice plate *are set into one end* of the nozzle body in order of the fuel swirler, followed by the orifice plate"). Claim 9 is similarly amended to more clearly recite this feature.

Thus, the present invention's swirler may be inserted directly into the end of the nozzle body and held by the orifice plate in a manner which minimizes nozzle body complexity and component and assembly costs as compared to the

Yokoyama reference. Moreover, this arrangement results in the swirler being held in a fixed position against the nozzle body at all times.

The Yokoyama reference discloses a nozzle tip 10 and a separate nozzle main body 20, with a swirler plate 12 which is *loosely* located within the nozzle *tip* 10 (*i.e.*, not within the nozzle *body* 20). The Yokoyama arrangements therefore do not permit the swirler to be *pressed* against the main body of the injector, and do not provide the ease of assembly and lower component and assembly costs of the present invention.

Because the Yokoyama reference fails to disclose the separate fuel swirler and welded-in, swirler-pressing orifice plate arrangements recited in amended claims 8 and 9, these claims are patentable over Yokoyama under § 102(b).

Claims 14-15: Claim 14 has been amended to recite features of the present invention not disclosed in Yokoyama:

> the *upper surface* of the fuel swirler is equipped with fuel passage grooves for letting fuel flow *from a center of the fuel swirler to an outer circumference* thereof;
>
> the *lower surface* of the fuel swirler is equipped with passage grooves for generating a swirl to fuel *and* an annular passage communicating with the passage grooves for swirl *at an upstream side of the passage grooves*; and
>
> the outer circumference of the fuel swirler is equipped with faces to be fuel passages for connecting the fuel passage grooves of the upper surface and the annular passage of the lower end surface.

Thus, the upper surface has grooves which allow fuel to be supplied to the lower surface swirl passage grooves, via an intermediary annular passage around the outer periphery of the lower surface. This annular passage acts as a circumferential "sump" to ensure enough fuel volume is available for sending

into the lower surface fuel passage grooves, thereby minimizing the influence of pressure variation in the fuel supply and enhancing fuel injection responsiveness. Application at 23:23-24:3.

The fuel swirler on Yokoyama lacks both the upper surface grooves and lower surface annular passage of the present invention's swirler. The Yokoyama swirler therefore fails to disclose the present invention's advanced swirler arrangements. Claim 14 and its dependent claim 15 are therefore patentable over Yokoyama under § 102(b).

In view of the foregoing, reconsideration and withdrawal of the pending § 102(b) rejections of claims 4-5, 8-9 and 14-15 is respectfully requested.

CONCLUSION

In view of the foregoing remarks, the Applicants respectfully submit that claims 4-5, 8-13 and 18-19 are now in condition for allowance. Issuance of a Notice of Allowance for claims 1-19 is respectfully requested.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit

Account No. 05-1323 (Docket #381NT/49741US).

Respectfully submitted,

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